IN THE CLAIMS

1. (Original) An implantable cardiac rhythm management device comprising:

an input circuit for receiving a sampled signal corresponding to cardiac electrical activity;

a controller coupled to the input circuit and adapted to determine a fundamental frequency of the sampled signal by autocorrelating a function of a series of characteristic points, the series of characteristic points determined based on the sampled signal and each characteristic point having a time of a lobe in a curvature series; and

a memory coupled to the controller and adapted to store the fundamental frequency.

2. (Original) The device of claim 1 further wherein the controller is adapted to determine a size of a characteristic point and wherein the controller is adapted to determine the fundamental frequency as a function of the size.

3. (Original) The device of claim 1 further comprising a rate estimator coupled to the controller and adapted to generate a beat frequency and further wherein the controller is adapted to generate a heart rate based on the beat frequency and the fundamental frequency.

4. (Original) The device of claim 1 further including a telemetry circuit coupled to the controller and adapted to communicate to a programmer.

5. (Original) The device of claim 1 further including a therapy circuit coupled to the controller and adapted to deliver electrical stimulation as a function of a signal received from the controller.

6. (Original) A method comprising:

from a curvature series generated as a function of a sampled input signal, establishing a series of characteristic points with each characteristic point corresponding to a time of occurrence of a lobe in the curvature series;

using a processor to determine a frequency for the input signal by autocorrelating a function of the series of characteristic points; and

storing the frequency in a memory.

7. (Original) The method of claim 6 wherein the time of occurrence of the lobe includes the time of occurrence of a centroid of the lobe.

8. (Original) The method of claim 6 wherein, for each characteristic point, determining a size as a function of an area of the lobe, and further wherein using the processor to determine the frequency for the input signal includes determining the frequency as a function of the size of each characteristic point.

9. (Original) The method of claim 6 wherein autocorrelating the function of the series of characteristic points includes autocorrelating a series of time differences for adjacent characteristic points as a function of time of occurrence for each characteristic point.

10. (Original) The method of claim 8 wherein autocorrelating the series of time differences for adjacent characteristic points as the function of time of occurrence for each characteristic point includes evaluating a product of a time difference between adjacent characteristic points and a time difference between time shifted adjacent characteristic points.

11. (Original) The method of claim 10 wherein the adjacent characteristic points are in time overlap relation with the time shifted adjacent characteristic points.

12. (Original) The method of claim 6 wherein autocorrelating the function of the series of characteristic points includes autocorrelating a product of at least two factors selected from the series of characteristic points.

13. (Original) A method comprising:

receiving a sampled input signal as a function of sensed cardiac electrical activity;

using a processor to generate a curvature series as a function of each received sample;

generating a series of characteristic points as a function of the curvature series, each characteristic point associated with a lobe in the curvature series, wherein each characteristic point has a time as a function of a time of occurrence of the lobe and a size as a function of an area of the lobe;

autocorrelating a function based on the series of characteristic points to determine a fundamental frequency; and

storing the fundamental frequency in a memory coupled to the processor.

14. (Original) The method of claim 13 wherein autocorrelating the function includes autocorrelating in a time domain.

15. (Original) The method of claim 13 wherein autocorrelating the function includes autocorrelating in a characteristic point domain.

16. (Original) The method of claim 13 wherein receiving a sampled signal includes receiving a ventricular rate electrogram and further wherein autocorrelating the function based on the series of characteristic points includes time domain autocorrelating a characteristic point time difference.

17. (Original) The method of claim 13 wherein receiving a sampled signal includes receiving a defibrillation channel electrogram and further wherein autocorrelating the function based on the series of characteristic points includes time domain autocorrelating a characteristic point time difference function.

18. (Original) The method of claim 13 further including delivering therapy as a function of the fundamental frequency.

19-24. (Canceled)

25. (Original) An article comprising a machine-accessible medium having associated data wherein the data, when accessed, results in a machine performing:

receiving a sampled signal;

generating a curvature series based on the sampled signal;

generating a series of characteristic points in the sampled signal, each characteristic point corresponding to a lobe in the curvature series and having a time corresponding to a time of occurrence of the lobe;

determining a frequency by autocorrelating a function of the series of characteristic points; and

storing the frequency in a memory.

26. (Original) The article of claim 25 wherein the data, when accessed, further results in the machine generating, for each characteristic point, a size determined as a function of the area of the lobe in the curvature series.

27. (Original) The article of claim 26 wherein autocorrelating the function of the series of characteristic points includes autocorrelating the function of the series of characteristic points having the size greater than a predetermined value.

28-40. (Canceled)

41. (Original) A method comprising:

from a first curvature series generated as a function of a sampled first input signal of a cardiac signal, establishing a first series of first characteristic points and from a second curvature series generated as a function of a sampled second input signal of the cardiac signal, establishing a second series of second characteristic points, with each characteristic point corresponding to a time of occurrence of a lobe in the curvature series;

using a processor to determine timewise proximity of the second characteristic points relative to the first characteristic points;

as a function of the timewise proximity, classifying the cardiac signal; and

storing the classification.

42. (Original) The method of claim 41 wherein the time of occurrence of the lobe includes the time of occurrence of a centroid of the lobe.

43. (Original) The method of claim 41 wherein the first input signal is received from a first heart chamber and the second input signal is received from a second heart chamber.

44. (Original) The method of claim 41 wherein the first input signal includes a ventricular input signal and the second input signal includes an atrial input signal.

45. (Original) The method of claim 41 wherein classifying includes establishing a plurality of windows, with each window located before each first characteristic point.

46. (Original) The method of claim 45 wherein classifying the cardiac signal includes:

determining a backward count as a function of the number of first characteristic points having at least one second characteristic point in a window of the plurality of windows;

determining a forward count as a function of the number of second characteristic points located within at least one window of the plurality of windows; and

plotting the backward count as a function of the forward count.

47. (Original) The method of claim 46 wherein plotting the backward count as a function of the forward count includes plotting the backward count divided by a total number of first characteristic points.

48. (Original) The method of claim 46 wherein plotting the backward count as a function of

the forward count includes plotting the forward count divided by a ratio of a number of first characteristic points in the first series to a number of second characteristic points in the second series.

49. (Original) The method of claim 46 wherein plotting the backward count as a function of the forward count includes plotting the forward count expressed as a percentage.

50-57. (Canceled)

58. (Original) An article comprising a machine-accessible medium having associated data wherein the data, when accessed, results in a machine performing:

receiving a first sampled signal and a second sampled signal, each based on cardiac electrical activity for an epoch;

generating a first curvature series and a second curvature series based on the sampled signal;

generating a first series of characteristic points in the first sampled signal and a second series of characteristic points in the second sampled signal, each characteristic point corresponding to a lobe in a curvature series and having a time corresponding to a time of occurrence of the lobe;

generating a classification of the epoch based on a plot of timewise occurrence of first series characteristic points relative to timewise occurrence of second series characteristic points and a separation contour; and

storing the classification in a memory.

59. (Original) The article of claim 58 wherein the data, when accessed, further results in the machine generating, for each characteristic point, a size determined as a function of the area of the lobe in the curvature series.

60. (Original) The article of claim 58 wherein the data, when accessed, further results in the

machine generating a plurality of windows, each window disposed ahead of a characteristic point of the first series of characteristic points.

61. (Original) The article of claim 60 wherein generating the classification includes plotting a backward count based on a number of first series characteristic points having at least one second series characteristic point within a window of the plurality of windows and further includes means for determining a forward count based on a number of second series characteristic points disposed within a window of at least one first series characteristic point.